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AGS IPM Emittance and Coherence Measurements

This document is intended to serve as a guide for Operations on making AGS IPM and beam coherence measurements.

I. Emittance measurements using the AGS IPM application

Programs used in this step:

- AGS IPM application (StartUp -> AGS Applications -> AgsIpm)
- StarOffice at mcr_3, containing the current day's spreadsheet file

Procedure:

1. Open the AGS IPM application, and ensure that beam is available in the AGS.

2. Click on "Acquisition (Single-Cycle). Figure 1 below shows what reasonable data should look like.

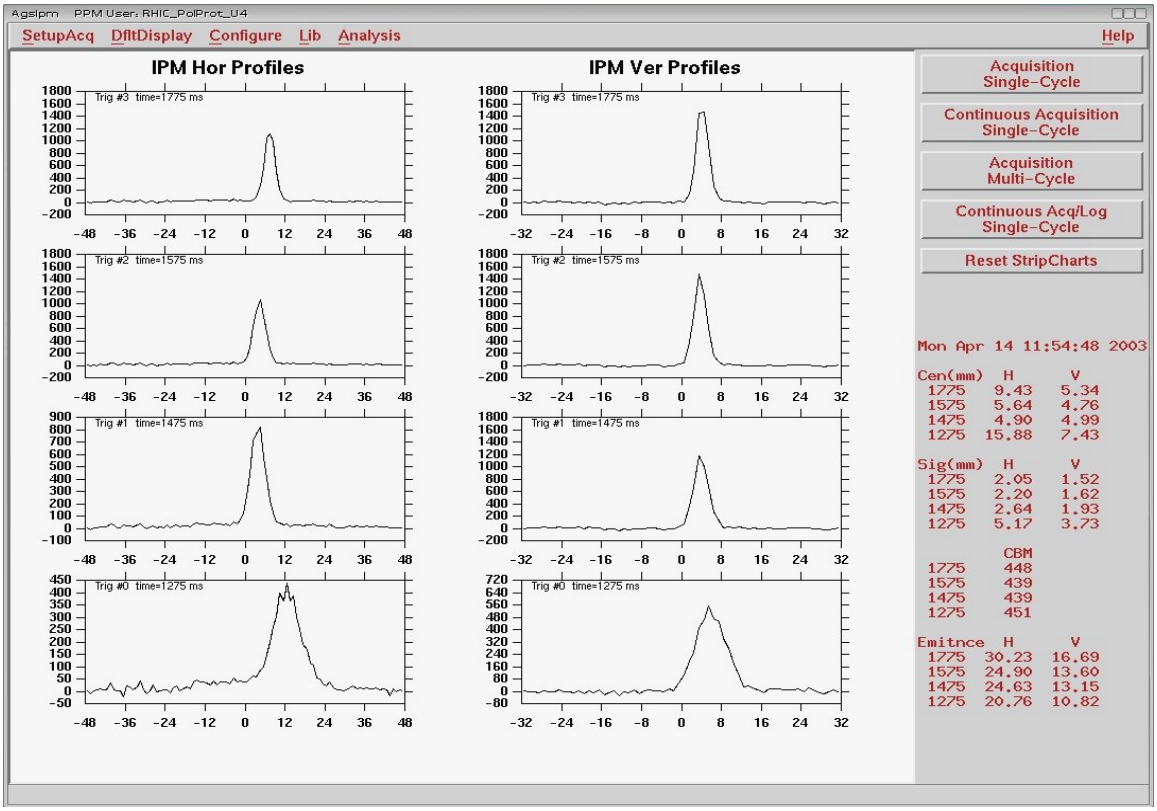

Figure 1

3. If noise can be seen on any of the plots (in this example, the bottom left), then the background trace probably needs to be refreshed.

    - Configure -> Background -> Init (to 0) (both horizontal and vertical, see Figure 2)
    - Inhibit beam in the AGS.
    - Click "Acquisition (Single-Cycle)."
    - Uninhibit beam in the AGS
    - Configure -> Background -> Copy from mmnt (both horizontal and vertical)
    - Click "Acquisition (Single-Cycle)" to acquire data using the new backgrounds.

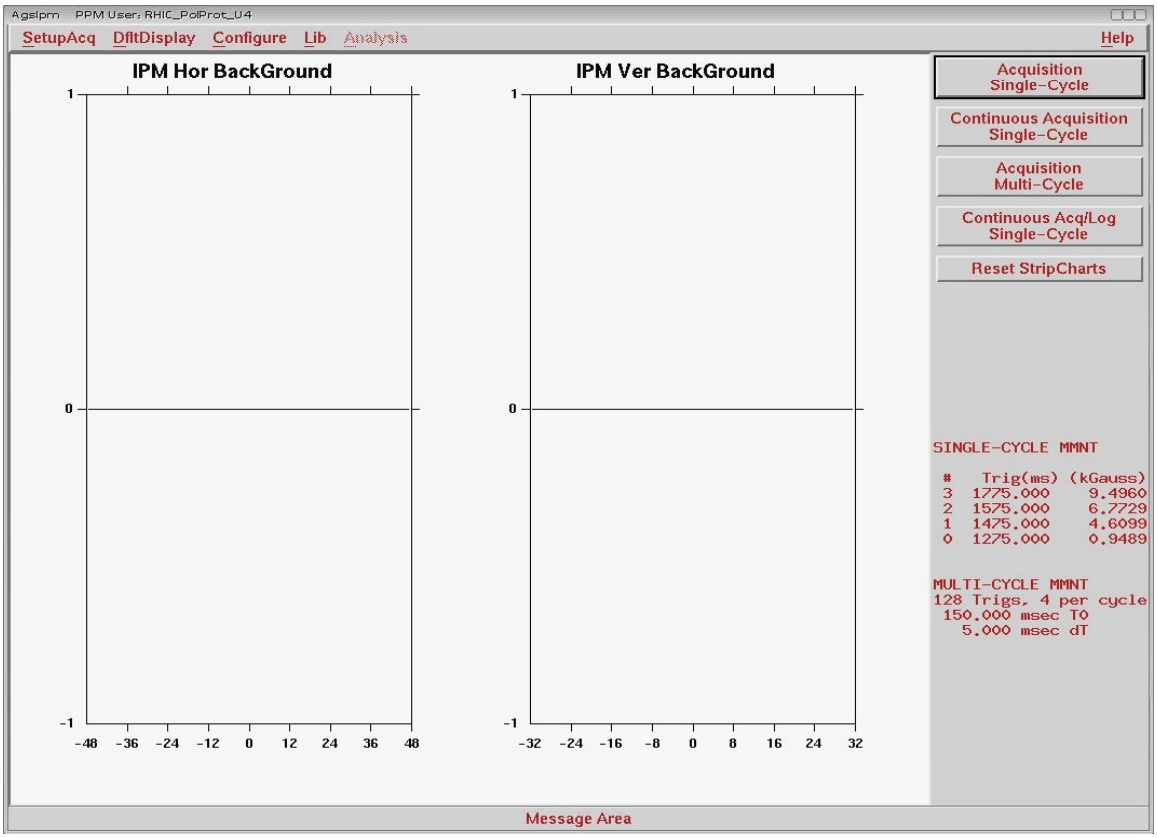

Figure 2

4. Copy the values shown at the bottom-right of figure 1 for Horizontal and Vertical Emittances into the appropriate cells of the spreadsheet shown below (Figure 3). The emittance cells are adjacent to their corresponding times.

U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
ipm	ipm	ipm	ipm	ipm	ipm	ipm	ipm	ipm	ipm	ipm	ipm
time(ms)	H(mm	V	time	H	V	time	H	V	time	H	V
1275	16.5	9.3	1475	19.1	11.5	1575	21.0	13.6	1775	22.3	14.3

Figure 3

II. Measuring Beam Coherence

Programs used in this step:

- AgsCoherence (run /home/cfsb/mcr/pp/AgsCoherence)
- StarOffice at mcr_3, containing the current day's spreadsheet file

Procedure:

1. Open AgsCoherence and ensure that beam is available in the AGS

2. Read the four times from the spreadsheet file (Figure 4)

AG	AH	AI	AJ	AK	AL	AM	AN
0+a	0+dq	12+a	12+dq	36-a	36-dq	36+a	36+dq
	1339 ms		1453 ms		1514 ms		1684 ms

Figure 4

3. Input the first time entry into the DelayTime[ms] field

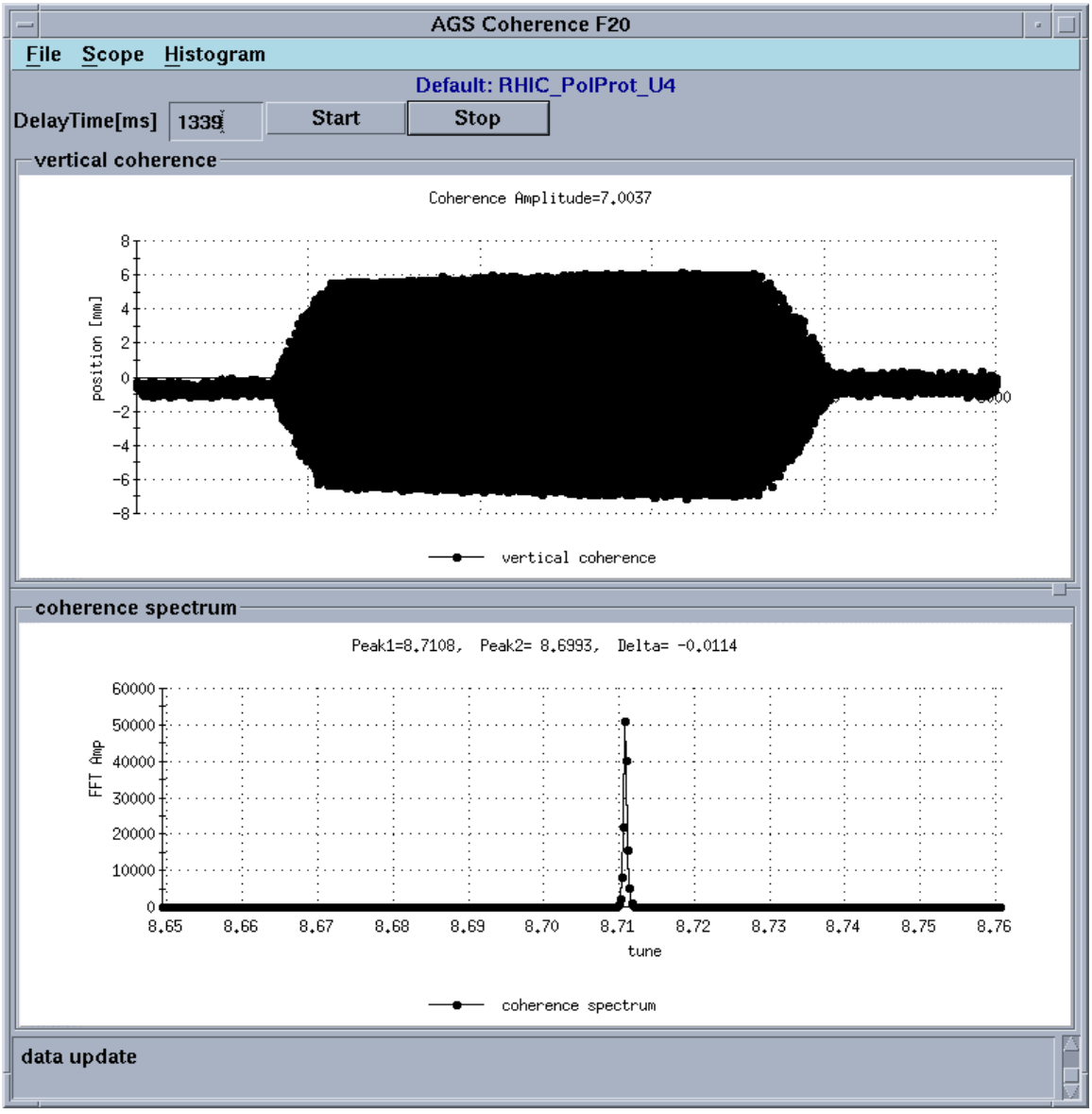

Figure 5

4. Click the Start button and notice the Coherence Amplitude value in the top window, and Delta value in the bottom window (Figure 5).

5. Record the amplitude and delta values into the _+a and _+dq columns corresponding to the delay chosen.